

SCIENCE & GOVERNMENT REPORT

22nd Year of Publication

The Independent Bulletin of Science Policy

Volume XXII, No. 3

P. O. Box 6226A, Washington, D. C. 20015

© February 15, 1992

Q&A With AAU's Rosenzweig

A New Nastiness Prevails In Federal-Academic Ties

For nearly a decade, Robert M. Rosenzweig has been deep in the politics of academic science and government as President of the Association of American Universities (AAU), the Washington-based outpost of big-league research universities, 56 in the US, 2 in Canada. A political scientist and former Vice President for Public Affairs at Stanford, Rosenzweig has guided the AAU from obscurity to wide acceptance in Washington science-policy circles. He has announced his intention to step down from the AAU at the end of this year. Rosenzweig spoke with SGR Editor Greenberg on February 10. Following is the text, transcribed and edited by SGR.

SGR. The academic community is gloomy these days about relations with Washington.

Rosenzweig. You'd have to be even more optimistic than Pollyanna to look around at what's been happening for the last year and a half or so and conclude that things are going well. I haven't seen quite so much nastiness.

SGR. Is it just Dingell [Congressman John Dingell, who has raised questions about millions of dollars in indirect-cost payments to universities]?

Rosenzweig. No, it's not just Dingell. What Dingell has tapped is a larger sense of unease and discontent about the way universities have been operating. The same people who are expressing that unease will tell you that universities have never been more important. They understand that universities are important, and they are therefore more inclined to judge harshly departures from expected norms of behavior.

SGR. Even so, research funding has held up and politicians are full of praise for universities, starting with the President.

Rosenzweig. It's always qualified. Look at the concern about foreign investment in American universities. You can say, well, that's just another example of a kind of American nativism that appears from time to time. And since universities are now important, people now think of universities, and that's true. But the fact is that they didn't used to think of universities when questions like that arose.

SGR. The response of the universities has been: God bless 'em. Let's get more foreign money.

Rosenzweig. I think that's the right answer myself. But there's going to be a lot of criticism.

SGR. You felt that the Dingell hearings on indirect costs
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Brandishing a Libel Threat

"Science" Editor Denies Yielding to FBI Pressure

Daniel E. Koshland Jr., editor of *Science*, journal of the American Association for the Advancement of Science, has threatened a libel suit against the British weekly *New Scientist* for stating that he yielded to pressure from the FBI to soften the effect of a paper disputing the accuracy of DNA fingerprinting, a favored tool of law enforcement.

The allegation, Koshland stated in a letter dated January 31 to the editor of *New Scientist*, is "untrue and libelous," adding that "A retraction of equivalent prominence setting out the correct facts may perhaps avoid a costly legal action."

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In Brief

NIH reports "a steady annual erosion" in the proportion of grant applicants under age 35—from 25.4 percent of applicants in 1980 to 15.5 percent in 1990. Among those 26-30, the 10-year decline was even sharper, from 4.1 percent to 1.2 percent. In the same period, the proportion of applicants over 45 rose from 30.9 percent to 37.2 percent, according to *Peer Review Notes*, the NIH newsletter for application reviewers, which added: "Ironically, though, it is the applicants in the shrinking 26-35 age group that receive the best scores and are most successful in obtaining NIH funding.... Unfortunately, though, applications from this age group are dwindling."

Commenting on the Educational Testing Service's recent gloomy assessment of American students' performance in science and math, White House Science Adviser D. Allan Bromley noted that "the good news is that the top 5-10 percent are as good as any," proving, he said, "that in any population, there are 5-10 percent of the students who can't be screwed up, no matter how bad the schools." Bromley made the observation at the Feb. 6 meeting of the President's Council of Advisers for Science and Technology.

The Spanish government has agreed to provide \$500,000 a year to support a small international staff focused on the social and economic aspects of global change. To be located in Spain, the group will be under the wings of the International Social Science Council. The topic is a neglected one, in the view of the Bush Administration, which last year established a Task Force on the Economics of Global Change, chaired by John Riley, a Department of Agriculture economist.

... In Unusual Move, Rebuttal Article Also Published

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The whole affair is extraordinary, from Koshland's acknowledged departure from his journal's standard publishing procedures in the case of the disputed paper to the libel threat to *New Scientist* Editor David Dickson.

According to Jane Kirtley, Executive Director of the Reporters Committee for Freedom of the Press, "It is virtually unheard of for one publication to threaten a libel suit against another." Kirtley, an attorney and specialist in libel law, told SGR, "There's a sense in publishing that it's not appropriate to use libel to settle disputes. If you don't like something that's been printed, answer it in print."

Koshland did not return a call from SGR requesting a discussion of the controversy. Richard S. Nicholson, Executive Officer of the AAAS and Publisher of *Science*, told SGR that he had not been consulted about the letter. "I don't know anything about it," he said. Ellis Rubinstein, Deputy Editor of *Science*, told SGR that Koshland "discussed the letter with the AAAS attorneys and they advised us to go ahead with it." Rubinstein characterized the letter as a request for a correction and not a threat of a libel suit.

The research paper, by Richard Lewontin of Harvard, and Daniel Hartl of Washington University, was published in the December 20 *Science* under the title "Population Genetics in Forensic DNA Typing." Publication followed a telephone request by a Justice Department official that the authors withdraw the paper. The authors refused, but did comply with Koshland's request for changes in the manuscript—after it had been accepted and was in proofs.

In addition, a rebuttal article was solicited for simultaneous publication—unprecedented for *Science*, according to Koshland himself. And in the same issue with the conflicting research papers, the *Science* news section carried an article headlined "Fight Erupts Over DNA Fingerprinting," and another headlined "Was *Science* Fair to its Authors?"

The *Science* news account stated: "Rumors abound that unnamed people from the FBI said they would make sure the article was killed. John Hicks, director of the FBI's Crime Laboratory, says he heard the rumors, questioned his staff, and could find no evidence for it. And editor Koshland insists that he heard from no one in the FBI or in the government; he only heard complaints from academic scientists."

The *New York Times* reported on December 20: "Dr. Koshland said it was unusual for the journal to publish a point by point rebuttal in the same issue as it publishes a scientific paper. 'I can't remember another one like this,' Dr. Koshland said. Ordinarily, *Science* publishes rebuttals later, as 'technical comments,' and gives the authors a chance to reply to their critics."

The DNA fingerprinting method involves matching of genetic materials from criminal suspects and blood and semen samples from crime scenes and victims. The technique has been enthusiastically embraced by law-enforce-

ment officials as a virtually infallible method of identification.

But a number of geneticists, Lewontin and Hartl prominent among them, have questioned claims that the probability of two samples matching by chance is nil—1 in 1 million or, according to the most grandiose claim, 1 in 738,000,000,000,000. What's lacking, the critics say, are data on genetic variations among ethnic groups. According to some of the critics, law-enforcement officials have responded to these criticisms with harassment and threats aimed at maintaining the technique's acceptance in the legal system.

Submitted to *Science* last September, the Lewontin-Hartl paper was still in the editorial mill when Hartl received a call from James Wooley, an attorney with the Justice Department Strike Force in Cleveland. Wooley, who had prosecuted a case in which Lewontin and Hartl testified for the defense, asked that the paper be withdrawn, according to Hartl.

In a telephone interview with SGR, Hartl said Wooley "told me his purpose was to lobby me. He said publication of the paper would make prosecutions more difficult." Wooley, according to various published sources, said he received a copy of the then-unpublished paper from an FBI agent who said it had been used by the defense in a criminal trial. The authors refused Wooley's request, and Lewontin sent him a nasty letter.

Last fall, *Science* notified Lewontin and Hartl that the paper had been accepted for publication. But in mid-October, about a week after receiving proofs, Lewontin said, Koshland called him and told him that a *Science* staff member attending the International Congress of Human Genetics had picked up reports that the paper was stirring controversy. Hartl told SGR that Koshland requested that some changes be made in the paper to remove "ambiguities." Lewontin refused to make the changes, Hartl said. Koshland then called Hartl, who said that he made several changes, "but I didn't change the message."

Hartl said that Koshland did not tell him or Lewontin that

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Independently published by Science & Government Report, Inc., twice monthly, except once each in January, July, August, and September. Annual subscriptions: Institutions, \$358.00 (two years, \$610.00). Bulk and individual rates upon request. Editorial offices at 3736 Kanawha St. NW, Washington, DC 20015. Tel. (202) 244-4135. For subscription service: PO Box 6226A, Washington, DC 20015. Tel. 1-800-522-1970; in Washington, DC 785-5054. Reproduction without permission is prohibited. SGR is available on University Microfilms International. Claims for missing back issues will be filled without charge if made within six weeks of publication date. ISSN 0048-9581.

... Q&A: "Vindictive Spirit" in Indirect-Cost Inquiry

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were hostile or vindictive?

Rosenzweig. The way in which they have been conducted, in some respects the way in which the staff has behaved, their interactions with the press and with television, showed a spirit that I find, from time to time, really quite vindictive. But I've also said, consistently, that there are real problems in the system [for federal support of academic research]. We've said for years that there are problems in the system, and we've tried to make proposals for improving it.

SGR. What kind of problems?

Rosenzweig. The problems that we've identified have to do with the kind of opaqueness of the system, the difficulty of understanding what's in it, the difficulty of explaining, indeed of understanding, why indirect-cost rates are different at different institutions. Also, the inability to explain the difference between an indirect-cost rate and an indirect cost. The fact is that the system, as it has developed, has really turned into a contest between accountants, which is a large part of the problem that we've seen, and doesn't focus on important issues of science policy or educational policy.

SGR. Did the Dingell hearings accurately represent the problems at Stanford, or was there serious distortion?

Rosenzweig. There were problems at Stanford, but I think they were distorted in the telling, and in the answer, for

that matter. The constant references to the yacht, and the flowers, and the [antique] commode [items charged by Stanford as indirect costs of government-supported research]. Those are obviously intended to evoke a kind of visceral reaction that's designed to color your whole view of the larger picture.

SGR. The yacht, the flowers, and the commode were, in fact, violations.

Rosenzweig. No, the yacht was. And the university admitted that it was. The flowers were not, as far as I know.

SGR. Why should flowers be considered an indirect cost of research?

Rosenzweig. There are two different questions. Should they have been legitimate costs and were they legitimate costs? The answer to whether they should have been considered legitimate costs is probably no, almost certainly no. Were they legitimate costs? It's certainly arguable, and I think most people in universities would say they were legitimate under the rules as they existed last October [before OMB issued new regulations]. That problem has been solved with the list of unallowables [in the new regulations]. Every questionable charge that was identified in the Dingell hearings and in the audits that followed has now been made clearly and unambiguously unallowable. So, there's really no particular reason to be talking any

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DNA Fingerprinting Dispute

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a rebuttal article was in the works for simultaneous publication with their article. Written by Ranajit Chakraborty, of the University of Texas, and Kenneth K. Kidd, of Yale University, it appeared under the title "The Utility of DNA Typing in Forensic Work."

The *New Scientist* account of these events was published in the issue of January 4, under the headline "'FBI pressure' on journal forces climb-down." Stating that Koshland "took the unprecedented step of publishing a rebuttal of the article in the same issue," it added: "He appears to have done so in response to pressure from various parties with an interest in the technique." Reported as having "approached" the *Science* staffer who brought Koshland news of controversy from the Congress of Human Genetics was Thomas Caskey, of Baylor College of Medicine, a member of the *Science* editorial board.

The *New Scientist* article stated that Caskey "has a \$200,000 grant from the Department of Justice to study the technique. He licenses his fingerprinting technique to Cellmark Diagnostics, one of the largest companies in the business." And the report added: "According to *Science*, the FBI tried to get the manuscript withdrawn, although John Hicks, head of the agency's crime laboratory, denies this."

Koshland's letter to the editor of *New Scientist* stated:

"*Science* received no pressure whatsoever from the FBI, and there is nothing in *Science's* news article or other coverage of the matter indicating that we did. I am extremely concerned about the article's inaccurate headline and erroneous statements in the text. The article damages *Science's* reputation and may have serious financial consequences for us. A retraction of equivalent prominence setting out the correct facts may perhaps avoid a costly legal action. Based on our past association [*New Scientist* Editor Dickson formerly worked for *Science*], I assume this was an unintended error and not an intentional effort to place *Science* in a bad light, but I need to hear from you promptly."

As of February 13, a reply had not been received.

Facts are frequently difficult to sort out when the FBI, grandmasters at stealth and intimidation, are in the game. Koshland may indeed have been acting on his own initiative rather than in response to FBI pressure. But the outcome was surely not displeasing to the FBI: simultaneous publication of a rebuttal, appearing in the same issue with a serious criticism of the DNA technique, thereby reducing the impact of the criticism—at least in the eyes of juries.

The episode does not merit laurels for Koshland, the journal he edits, or its publisher, the AAAS. His resort to a libel threat could earn him a special place in the history of scientific publishing. What might it be called?

On advice of legal counsel, SGR terminates the story at this point.—DSG

... In Dealing With Government, "Trust But Verify"

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longer about commodores and flowers and entertainment.

What remains is a very serious issue of relations between the government and universities. And that has to do with the status of the memoranda of understanding [MOUs, agreements between the universities and government allowing exceptions to regulations governing indirect cost] negotiated through the '80s, and what their standing is going to be. What the Defense Department [which audits Stanford and some 40 other universities] has indicated so far at Stanford is that they expect reimbursement.

SGR. *Defense auditors say Stanford owes the government \$231 million. Is it conceivable that Stanford will be required to repay that amount?*

Rosenzweig. Why is it inconceivable? It would be a very serious blow to the university. There's no question about that. But if it's inconceivable, why are they conceiving of it at the DCAA [Defense Contract Audit Agency] and the Dingell Committee?

SGR. *The General Accounting Office testified that the memorandums of understanding can be ruled invalid if they were made in violation of A-21 or other government regulations.*

Rosenzweig. The issue is what constitutes a contract. And that's not going to be decided by Congress—certainly not by a single Congressional Committee. The parties will get into a tribunal, where they are now, as a matter of fact, and it will be decided by responsible parties.

I have not been and I am not critical of the fact of the [Dingell] Committee inquiry. They did discover some things that needed to be discovered. I think, though, that process has reached the point where it's about to become destructive. It's been embarrassing and, in that sense, damaging until now, but on the whole probably rather more healthy than not. But that balance is tipping.

The memoranda of understanding issue is really a very important one, a substantive issue. If the Defense Department is in fact being pressed by the Dingell Committee to pursue that issue when they would not otherwise have done so, as against their better judgment, it would be very unfortunate. It's unfortunate that it's being done at all. It would be doubly unfortunate if it were being pressed because of political pressures from the Committee.

SGR. *You're raising the possibility that Defense is not doing this on its own initiative. What's the evidence?*

Rosenzweig. It's manifestly true that they wouldn't have looked at this issue at all if it hadn't been for the hearings. There's no question about that.

SGR. *But then the second stage was the validity of the MOUs. And you're suggesting that Dingell has put the heat on the Navy to undermine the MOUs.*

Rosenzweig. I hope that's not the case, but if it is the case, I hope the Committee would back off and let that issue be handled, as it should be, now that it's been raised, through

regular contract-adjudication procedures. I think the hearings have produced some useful changes, but they're really marginal to the system, although they're important to sustaining public confidence in the system. The dollars involved are not terribly significant.

SGR. *You're suggesting that the response of the federal auditing agencies is: "Cover your ass. Dingell is after us. Let's tell him their agreements with the government are invalid, and it's not our fault."*

Rosenzweig. I think that's a reasonable hypothesis. It remains to be proved.

SGR. *It's generally accepted that Defense and HHS [Health and Human Services] have run for cover.*

Rosenzweig. That's the way I read it.

SGR. *Do you see anything coming along to reverse these hostilities and establish more congenial relations?*

Rosenzweig. I think there's perhaps a more realistic view growing in the university community about the nature of the relationship that they have with the government. The issue of the memoranda of understanding is a very sobering one for university people. Because what it says is that, if a government agency gets into trouble politically, any notion that it was engaged in a partnership with the universities goes right out the window. That the first obligation is not the obligations of the partnership but self-preservation.

SGR. *Then the lesson learned is don't trust the government.*

Rosenzweig. The lesson learned is, when you're dealing in a political arena, which you are inevitably to some degree when you're using public money, you can't fully trust the people you're dealing with.

SGR. *It appears, then, that the distrust is enlarged.*

Rosenzweig. At any given time there are going to be good elements and less good elements. The relationships of the academic community with the National Science Foundation are excellent. They're in some respects less good with NIH, although not bad. There are problems with the Defense Department over indirect-cost recovery. Problems with HHS over negotiation of indirect-cost rates. There are lots of different things going on at the same time.

What you can't assume any longer—and, I have argued, never could assume—is that universities would be treated by the government as having some kind of special relationship that was immune from the pressures that govern behavior in other domains.

SGR. *Does that mean a university can no longer trust a contract or an agreement with the government.*

Rosenzweig. What did President Reagan used to say? "Trust but verify."

SGR. *But there's no way to verify if ten years later they can turn around and say that an agreement you've relied on for a decade is invalid.*

Rosenzweig. Just be careful, that's all I say. And univer-
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Healy Names Aides; NSF Picks Social Science Head

No prudent federal official would think of facing the perils of Washington without huddling first with a public-relations specialist and a legal counselor.

Accordingly, **Bernadine Healy**, Director of the National Institutes of Health, has added one of each to her personal staff. **Johanna Schneider**, Deputy Assistant Secretary for Public Affairs at the Department of Labor, has been appointed Senior Adviser for Media Relations and Press Secretary to the NIH Director—a new title in the Bethesda complex. And **Leslie Platt**, a private, solo law practitioner who formerly was a senior attorney in the Department of Health and Human Services (HHS), has been appointed Executive Assistant to the NIH Director.

Platt told SGR that he's not serving as Healy's lawyer, but he arrives with legal experience that Healy has said is lacking on her immediate staff.

Cora Marrett, Professor of Sociology at the University

of Wisconsin, has been appointed head of the National Science Foundation's newly established Directorate for the Social, Behavioral, and Economic Sciences. Established last October from components long submerged in other parts of the Foundation, the Directorate is a response to longstanding complaints of relative neglect of the disciplines in its title. The big hope, of course, is that greater visibility will bring more money.

New staff assignments within the White House Science Advisory complex: **Vickie Sutton** has been appointed to the newly created post of Assistant Director of Management and Science Councils, which encompasses the Federal Coordinating Council for Science, Engineering, and Technology (FCCSET) and the President's Council of Advisers for Science and Technology (PCAST). **Charles Dickens** has been named Executive Secretary of FCCSET, and **Alicia Dustira** has been named Executive Secretary of PCAST.

Rosenzweig: Q&A

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sity people are talking a little differently from the way they used to talk. They're questioning whether the stability and solidity of the relationship—things that were taken for granted in the past—are less likely to be taken for granted now. All that is healthy. I thought for a long time that university people had quite unrealistic expectations about governmental behavior.

In some ways, faculty are the worst of all when it comes to unrealistic expectations. The sense of grievance that you hear from researchers about how difficult it is to get money comes out of an expectation that was born out of years of experience that the money would always be there, and in ever-growing amounts. And the feeling is that something must be wrong with the people who are responsible for the money. Among faculty members, the sense that they're being betrayed by the government is very strong.

SGR. *Can universities reduce their dependence on Washington and still thrive?*

Rosenzweig. Not the major research universities. Only the power to tax generates enough revenue to pay for research on the scale that the modern world requires.

SGR. *Wouldn't it be preferable to have a limited number of well-financed places rather a lot of undernourished ones? Britain follows that principle.*

Rosenzweig. I think that would be a disaster in the United States. I don't see any prospect of that happening. In the first place, we don't have the political instrumentalities that make that possible, as the British system does. But even if we did, I don't think that would be a very desirable way to go.

I think that all the talk and hopes about setting research priorities has probably been wrong. I now think that priorities are not going to be set nationally. What's going to

happen nationally is that large decisions are going to be made about the level of funding, and that will be constrained by macro-economic considerations. And within that, large decisions will be made about large projects. And those will be determined, in large part, by political considerations, not primarily scientific considerations.

The rest of the money is not going to be enough to do what everybody wants to do. And that's going to require that institutions make their own decisions about tailoring their programs. What will turn out to be scientific priorities in retrospect, 10 or 15 years from now, will be the accumulation of a large number of institutional decisions made in response to the fact of constrained resources. That seems to be the way things happen in this country. We don't do very well—in fact we hardly do at all—central planning of the kind that would enable us to establish scientific priorities.

SGR. *That sounds like a policy to share the scarcity.*

Rosenzweig. That's one possible outcome, and if it were to turn out that way, it would be a very unhappy result. I hope that over the next few years, as institutions look at their financial capabilities and at their continuing commitments, more institutions will decide not to do a little less of everything, but to do *none* of some things that they're now doing and perhaps more of others, or as much of others as they're now doing.

It's not going to be easy. What happens on campuses is that expansion takes place in the good times around the margins. People get good ideas and go out and hunt for money. If they get the outside money, they also make demands on institutional resources, but with very little central direction. That works for expansion. It doesn't work for contraction. You can only contract from the center, making decisions about the margins. And it takes a while for institutions to learn that mode of behavior, because it's not natural to universities. But it's becoming more and more required for survival in quality.

New Style in Research: Big, Multi-Agency Programs

Proudly cited by White House Science Adviser D. Allan Bromley as the big innovation in R&D management under the Bush Administration is a major emphasis on large, multi-agency programs focused on specific goals. Each is orchestrated by a senior official invested with Presidential authority. These programs are generously financed and appear to be the most rapidly growing segments of the federal R&D budget.

Bearing the elevated title of Presidential Initiatives—which grabs attention in the federal establishment—five of these are now in operation, all at the intersections of scientific and technical opportunity and political and economic interest (see box).

Whether in reality Presidential Initiatives add up to all that much difference from previous methods of doing business is difficult to ascertain at this stage. In many instances, the Initiatives are composed of activities that were previously accounted for on an agency-by-agency basis without any statement—and perhaps no clear idea—of the budget totals involved. Government R&D, after all, proceeded more or less satisfactorily under the feudal format that Presidential Initiatives are supposed to overcome. But on paper at least, the Initiatives suggest an unprecedented mobilization and focusing of government R&D resources.

By the Administration's reckoning, the combined budget requests for these programs for fiscal 1993 totals about \$10 billion out of a total R&D request of \$76 billion. But the funds for the Presidential Initiatives come mainly from the \$30 billion civilian share of the R&D budget. Gauged on that basis, the Initiatives now comprise about one-third of the US government's spending on civilian R&D and related matters.

The focal point for these multi-agency collaborations is an offshoot of the White House Office of Science and Technology Policy (OSTP): the Federal Coordinating Council for Science, Engineering, and Technology (FCCSET—pronounced "fix-it"), an assemblage of the heads or senior deputies of the government's major research agencies, chaired by OSTP Director and Presidential Science Adviser Bromley.

Pre-Bush, multi-agency programs existed more in theory than in practice, under the hopeful banner of inter-agency cooperation. Sometimes they harmonized, but more often, cooperation was impaired by jurisdictional sensitivities, imperial designs and fears of aggrandizement. Heavy responsibilities in science education, for example, have long been held by the National Science Foundation and the US Department of Education. But until FCCSET brought them to the table, Bromley says, the two agencies ignored each other.

FCCSET was written into the 1976 legislation that established OSTP. But the Council withered out of sight during the Reagan Administration. It was close to forgotten in science-policy affairs until Bromley deemed it a missing

link in the federal management of R&D and assigned a high priority to making it an important part of the White House science structure.

At a meeting February 6 of the President's Council of Advisers for Science and Technology (consisting of mandarins from outside government), Bromley said that the five Presidential Initiatives now in operation "saturate" his staff's managerial capacities. To make room for other Initiatives, he said, a new status, titled National Research Program, would be established to accommodate graduates from the Presidential rank. National Programs, Bromley explained, are considered very important, "but at a certain stage of maturity, the emphasis changes."

The Global Change Research Program, established in 1989 as the Bush Administration's first multi-agency program orchestrated under FCCSET, is under consideration for National status, Bromley said.—DSG

Publications describing goals, budgets, and agency roles in each of the five Presidential Initiatives of the Federal Coordinating Council for Science, Engineering, and Technology are available without charge as follows:

By the Year 2000: First in the World (51 pp.). Herewith, a masterplan arising from the Bush Administration's hallucinations about attaining swift American primacy in math and science education. If money has anything to do with this nation's dismal performance, the proposed budgets are trifles: \$2 billion, of which \$750 million is for graduate studies, hardly a deprived area on the educational landscape. Overall, math and science education are budgeted for a 7 percent increase, with NSF and the Department of Education spending most of the money.

Order from: FCCSET Committee on Education and Human Resources, c/o NASA, 400 Maryland Ave. SW, Room 6123, Washington, DC 20546; tel. 202/453-3504.

Advanced Materials and Processing: The Federal Program in Materials Science and Technology (64 pp.). The newest of the Presidential Initiatives, the materials and processing program puts a FCCSET umbrella over many longstanding programs widely dispersed among federal agencies. A big hope appears to be that the Presidential label will provide a fiscal stability that has often been lacking. The proposed budget calls for \$1.8 billion, calculated as an increase of 10 percent over this year's figure. The big participants are the Pentagon, DOE, NASA, and NSF.

Order from: FCCSET Committee on Industry and Technology, Room 309, Materials Building, NIST, Gaithersburg, Md. 20899; tel. 301/975-5655

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... Biotech Initiative Gets Biggest Budget—\$4 Billion

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Biotechnology for the 21st Century (125 pp.).

With a proposed budget of \$4 billion next year—an increase of 7 percent—biotechnology is the biggest of the Presidential Initiatives, reflecting Washington's faith that biotechnology is following in the trail of the railroad, the motorcar, aviation, and electronics as the next great source of economic expansion. NIH accounts for some 75 percent of the money, with DOE, NSF, and the Department of Agriculture providing most of the balance. But if only with small sums, many other federal agencies are in one way or another involved with biotechnology, e.g., the Department of Justice, which is listed for \$2.3 million, mainly for work on DNA-based identification techniques.

Order from: FCCSET Committee on Life Sciences and Health, c/o Office of Energy Research, ER-70, US Department of Energy, Washington, DC 20585; tel. 301/903-8061.

Our Changing Planet: 1993 US Global Change Research Program (79 pp.). The first of the FCCSET programs, this one is budgeted for \$1.3 billion next year, an increase of 24 percent, with funds spread among 30 federal agencies, though concentrated in NASA, NOAA, NSF, DOE, and EPA. Major categories of research: Climate modeling and prediction, global water and energy cycles, global carbon cycle, and ecological systems and population dynamics.

Order from: FCCSET Committee on Earth and Environmental Sciences, c/o NSF, Forms and Publications, 1800 G St. NW, Room 232, Washington, DC 20550; tel. 703/644-8585.

Grand Challenges 1993: High Performance Computing and Communications (68 pp.). Pushed by the high-tech aficionados of the Democratic Congress, the Bush White House is at last getting serious about the federal role in promoting the development and application of computer technology, particularly national networks—so-called computer highways. Among the descriptions of the computer plans are some close flirtations with government involvement in the marketplace, including a commitment to “the continued use of government and government-funded facilities as a prototype user for early commercial HPCC [high-performance computing and communications] products.” The budget proposal calls for \$803 million, an increase of 24 percent, with Defense, NSF, DOE, NASA, and NIH accounting for most of the money.

Order from: FCCSET Committee on Physical, Mathematical, and Engineering Sciences, c/o NSF, Computer and Information Science and Engineering, 1800 G St. NW, Room 306, Washington, DC 20550; tel. 202/357-7936.

More IN PRINT

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about which the report states, “Even some of the most cautious researchers are saying that ‘neem deserves to be called a wonder plant.’” The report, produced by an Ad Hoc Panel on Neem of the Academy's Board on Science and Technology for International Development, says extracts from neem seeds and leaves “may, in fact, be the ideal insecticides,” as well as sources of valuable medicinal products, fertilizers, lubricants, soaps, etc. The tree is described as easily grown “throughout most of the warmer parts of the world,” and is lauded for reforestation and as a source of shade and fuel. Included in the report are a worldwide list of neem researchers and word of the quarterly *Neem Newsletter*, “supplied free of charge to those engaged in neem research and utilization.” [Address: Division of Agricultural Chemicals, Indian Agricultural Research Institute, New Delhi, 110 012, India.]

Order National Academy of Sciences publications from: National Academy Press, 2101 Constitution Ave. NW, PO Box 285, Washington, DC 20055; tel. 1-800-624-6242; in Washington, DC, metropolitan area: 202/334-3313.

CBASSE Newsletter (12 pp., no charge), an “occasional” publication of the National Academy of Sciences Commission on Behavioral and Social Sciences and Education, tells of research projects planned and in progress at the Commission and lists its many recent publications on a wide variety of subjects, including AIDs, child care, merit pay, the consequences of ending mandatory faculty retirement, and behavioral measures of neurotoxicity.

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International Council of Scientific Unions (ICSU) Year Book 1992 (400 pp., \$70), from the world-spanning association of national science academies, research councils, and international scientific bodies, listings of hundreds of member organizations, with addresses, telecommunication numbers, and names of senior officials, plus a schedule of some 600 annual meetings of ICSU member organizations through 1996, and lots more.

Order from: ICSU, 51 Boulevard de Montmorency, 75016 Paris, France; tel. (33 1) 45 25 03 29.

Aerospace Facts and Figures 91-92 (176 pp., \$21 plus \$4 shipping for US and Canada, \$7 elsewhere), from the Aerospace Industries Association, a voluminous assemblage of statistics on aerospace production, sales, exports, employment, civil and federal expenditures, research, passenger volume, etc.

Order from: Aerospace Industries Association, Attn. Aerospace Research Center, 1250 Eye St. NW, Washington, DC 20005; tel. 202/371-8561.

International Environment: International Agreements Are Not Well Monitored (GAO/RCED-92-43; 60 pp., no charge), by the General Accounting Office (GAO), says there's generally poor compliance with the reporting requirements for six major international environmental agreements. Selected from among 168 such agreements to which the US is a party, those studied by the GAO cover ozone depletion, acid rain, marine pollution (2 agreements), endangered species, and whaling. The secretariats established to monitor compliance, GAO reports, lack authority and resources, and "not all parties report complete and timely information to the secretariats, particularly developing countries for which reporting is part of a larger problem related to their financial and technical capability to comply."

Also from GAO: **Defense Industrial Base: DOD Needs Better Method of Identifying Critical Technology Funding** (GAO/NSIAD-92-13; 10 pp., no charge), a baffling report, says the Pentagon has failed to collect data on how much the individual services and Defense agencies are spending on critical technologies, though the budget information, GAO says, is available from the spending sources—and it's included in this GAO publication. Listed are 20 technologies, along with budget totals for each and the aggregate amounts expended by each of the services and agencies. The report was requested by Senator Jeff Bingaman (D-New Mexico), author of 1989 legislation requiring the Secretary of Defense to prepare an annual Critical Technologies Plan.

And another from GAO: **Nuclear Security: Safeguards and Security Weaknesses AT DOE's Weapons Facilities** (GAO/RCED-92-39; 28 pp., no charge), based on reviews of

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the Department of Energy's security records at 39 "important weapons-related facilities" between January 1989 and September 1990, the GAO reports "2100 weaknesses" over a "wide range of security activities, including poor performance by members of DOE's security force, poor accountability for quantities of nuclear materials, and the inability of personnel to locate documents containing classified information." The GAO report states, "According to a DOE official, the agency follows a 'defense in depth' philosophy, which provides multiple layers of protection for its security interests, thus reducing the impact of weaknesses." The report was requested by Rep. John Dingell (D-Michigan), Chairman of the Energy and Commerce Committee and its Subcommittee on Oversight and Investigations.

Order from: USGAO, PO Box 6015, Gaithersburg, Md. 20877; tel. 202/275-6241.

Behind the Numbers: US Trade in the World Economy (297 pp., \$29.95, plus \$3 shipping), by the National Academy of Sciences Panel on Foreign Trade Statistics, says antiquated reporting concepts greatly exaggerate the American trade deficit by failing to take full account of major changes that have occurred in economic activities, including international service transactions and intra-company trade across national borders. As a result, the report concludes, the 1987 trade deficit was \$64 billion rather than the \$148 billion stated by the US government. Noting "major data gaps and quality problems with existing data on US international transactions," the report states data collection is fixated on "cross-border transactions—of residents versus non-residents, as well as the separation of domestic and international activities." It adds, "There is almost no evidence of modern process quality management in the statistical agencies that produce the data on US international transactions." The report was produced by a panel chaired by Robert E. Baldwin, Department of Economics, University of Wisconsin.

Also from the Academy: **Neem: A Tree for Solving Global Problems** (141 pp., \$19, plus \$3 shipping), an uncharacteristically (for the Academy) exuberant discourse on neem, a cousin of mahogany, native to India and Burma,

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